NOVEMBER/DECEMBER 2024

FEL21/CEL21 — ELECTROMAGNETISM AND AC CIRCUITS

Time : Three hours Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What do you meant by mutual inductance?
2. Define eddy current.
3. What do you meant by RMS value?
4. Define inductance.
5. Draw the growth and decay curve of L and R.
6. Write the time constant equation of C and R.
7. What is delta connection?
8. Give the details of AC dynamo.
9. State Gauss's law.
10. Define Ampere force law.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Describe the mutual inductance of a solenoid inductor.

Or

(b) Explain the coefficient of coupling.

12. (a) Discuss the EMF induced in a coil rotating in a uniform magnetic field.

Or

(b) Explain the LCR circuit.

13. (a) Describe the construction and working of transformer.

Or

(b) Discuss the growth and decay of the current in a charge having LCR.

14. (a) Explain the production and distribution of three phases AC.

Or

(b) Differentiate AC and DC dynamics.

15. (a) Explain Gauss law in electrostatics and magnetostatics.

Or

(b) Derive an expression for ampere's circuital law.

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SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe the coefficient of self-induction of a solenoid inductor.

17. Discuss the power factor in the case of an AC circuit containing resistance, inductance and capacitance.

18. Explain the growth the decay of change in a circuit having C and R.

19. Describe the construction and working principle of DC motor.

20. Derive any two Maxwell's equation in integral form.

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